**Instructor:** Dr. N. L. Markworth, Department of Physics and Astronomy  
**Email:** nmarkworth@sfasu.edu  
**Office:** STEM 207L  
**Student Hours:** MW 11:00 AM - 12:00 PM,  
MW 2:00 – 4:00 PM  
TR 2:00 – 4:00 PM  
**Phone:** 936-468-3001  
**Lecture Class Meetings:** Online  
**Course Home Page:** [http://www.physics.sfasu.edu/markworth/ast105502.pdf](http://www.physics.sfasu.edu/markworth/ast105502.pdf)  
**Laboratory Assistant:** Katie Bailey

**Course Description:** One semester hour, two hours lab per week including night viewing sessions by arrangement. Computation of lecture and laboratory grades into one grade; same grade recorded for both lecture and laboratory. Corequisite: AST 105502. Lab fee required.

AST 105 (1 credit – fully online) spans 15 weeks. There are readings in the lab manual. Each lab preparation and execution should take the student 2-3 hours per week.

**Materials:** The online version of the lab manual is available at the Barnes and Noble bookstore in the student center or at Jack Backers. The manual includes the exercises and supplements.

## ASTRONOMY 105L-520 LABORATORY  
**Spring 2020**  
**Online Lab Schedule**

<table>
<thead>
<tr>
<th>Lab</th>
<th>Due Date</th>
<th>Report Forms</th>
<th>Page</th>
<th>Lab Prep Video</th>
<th>Power Point</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 27</td>
<td>Constellations</td>
<td>1</td>
<td>Video 1</td>
<td>Set 1</td>
<td>Lab 1</td>
</tr>
<tr>
<td>2</td>
<td>Feb. 03</td>
<td>Measurements</td>
<td>9</td>
<td>Video 2</td>
<td>Set 2</td>
<td>Lab 2</td>
</tr>
<tr>
<td>3</td>
<td>Feb. 10</td>
<td>Mercury’s Orbit</td>
<td>25</td>
<td>Video 3</td>
<td>Set 3</td>
<td>Lab 3</td>
</tr>
<tr>
<td>4</td>
<td>Feb. 17</td>
<td>Lunar Phases</td>
<td>33</td>
<td>Video 4</td>
<td>Set 4</td>
<td>Lab 4</td>
</tr>
<tr>
<td>5</td>
<td>Feb. 24</td>
<td>Emission Spectra</td>
<td>39</td>
<td>Video 5</td>
<td>Set 5</td>
<td>Lab 5</td>
</tr>
<tr>
<td>6</td>
<td>Mar. 02</td>
<td>Earth’s Orbital Velocity</td>
<td>45</td>
<td>Video 6</td>
<td>Set 6</td>
<td>Lab 6</td>
</tr>
<tr>
<td>7</td>
<td>Mar. 16</td>
<td>H-R Diagram</td>
<td>55</td>
<td>Video 7</td>
<td>Set 7</td>
<td>Lab 7</td>
</tr>
<tr>
<td>8</td>
<td>Mar. 23</td>
<td>Stellar Parallax</td>
<td>The Pleiades</td>
<td>69</td>
<td>Video 8</td>
<td>Set 8</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>75</td>
<td>Video 9</td>
<td>Set 9</td>
<td>Lab 9</td>
</tr>
<tr>
<td>10</td>
<td>Mar. 30</td>
<td>Clusters</td>
<td>83</td>
<td>Video 10</td>
<td>Set 10</td>
<td>Lab 10</td>
</tr>
<tr>
<td>11</td>
<td>Apr. 06</td>
<td>Hubble’s Law</td>
<td>105</td>
<td>Video 11</td>
<td>Set 11</td>
<td>Lab 11</td>
</tr>
<tr>
<td>12</td>
<td>Apr. 13</td>
<td>Rotation of Saturn</td>
<td>115</td>
<td>Video 12</td>
<td>Set 12</td>
<td>Lab 12</td>
</tr>
</tbody>
</table>
Each entry in underlined blue in the table above is a hyperlink. Click on the title to jump to that feature. There are 12 labs plus one night lab at the SFA Observatory. The due dates of the labs are listed in column two. The lab report forms are in the column labeled Report Form. These files are WORD documents and you should copy them into your word processor. Fill in your answers and send a copy to the appropriate Dropbox in D2L. These are NOT the full lab write-ups. Those are in your lab manual. The full write-ups contain procedures and data required to complete the exercises. Page is the page number in the lab manual. Lab Prep Videos have been prepared and are linked in the next column. Please look at these before attempting a lab. The PowerPoint® slides used in the lab prep videos are linked separately in the next column. The last column contains notes on each of the labs and should be read after the lab prep video is viewed.

______________________________________________________________________

The following lab contain the core curriculum assessments. The instructor will advise you as to which assessment is due this semester.

The Measurements Lab (Lab 2) will allow students to demonstrate mastery of their empirical and quantitative skills. This lab is an introduction to scientific notation, significant figures, unit conversion, and errors of measurement.

______________________________________________________________________

In addition to the lab schedule, we require each student to attend one night exercise at the SFA Observatory.

OUTDOOR NIGHT LAB CALENDAR

<table>
<thead>
<tr>
<th>Please read the following guidelines carefully, as they concern your grade and require your input to work properly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are required to attend one night. There is a sign-up at <a href="http://astro.sfasu.edu/nightlab/index.html">http://astro.sfasu.edu/nightlab/index.html</a>. Information on where to meet is also on that page. If you sign up and then discover you cannot make it, simply remove your name.</td>
</tr>
<tr>
<td>If you are so far from Nacogdoches that visiting the Observatory is impractical, please see the discussion board in the lab course.</td>
</tr>
<tr>
<td>The night lab (or alternate exercise) is a required component of AST 105 and will not be dropped.</td>
</tr>
<tr>
<td>On your assigned night, meet at the commuter’s bus stop (located on the circular drive between the Kennedy Auditorium and the Student center) a few minutes before the scheduled time. A bus will provide transportation to and from the SFA Observatory. The bus will leave promptly at the scheduled time - don’t be late!</td>
</tr>
<tr>
<td>The night lab will be cancelled if it is raining or the sky is completely overcast. We try to notify about inclement weather on the night lab sign-up page.</td>
</tr>
<tr>
<td>Observatory night lab exercises generally require three hours to complete. This is the time from leaving to arriving back on campus.</td>
</tr>
</tbody>
</table>
### SUPPLIES FOR NIGHT LAB

Each student **MUST** bring the following supplies to the night lab session.

1. Pencil and eraser
2. Clipboard or other hard writing surface
3. Clear ruler with centimeter scale
4. Laboratory Manual
5. Star Chart (print pages 1-3 at the Chart link [here](#))
6. Calculator

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### Program Learning Outcomes

The student will demonstrate knowledge and comprehension of the basic and applied fields of physics.

### Core Curriculum Objectives

This course has been selected to be part of Stephen F. Austin State University's core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives.

Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to D2L this semester, and the date the assignment(s) should be uploaded to D2L. Not every assignment will be collected for assessment every semester.

The Texas Higher Education Coordinating Board has identified six objectives for all core courses: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives.

AST 105 is a general education core curriculum course and fulfills the Empirical and Quantitative Skills general education core curriculum requirement. Another “shell” course has been created to collect student artifacts to meet this state requirement. You will see this course on your D2L list. It has the name Core Assessment Spring 2020.

The wording that follows in red comes from the University. We do the assessment in Spring terms of odd years, but I am including the wording so it does not get lost.

During this semester, you will receive an assignment that fulfills both the requirements of this course and the needs of the Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board Stephen F. Austin State University.

When you complete this one assignment, you need to upload the assignment to both the AST 105 dropbox and the Empirical and Quantitative Skills dropbox in the course called Core Assessment Spring 2020. If you have any questions, please see your instructor or contact the University Assessment Specialist at (936) 468-1267 or email jstringfield@sfasu.edu.

The chart below indicates the core objectives addressed, the assignment(s) that will be used to assess the objectives in this course and uploaded to the D2L Empirical and Quantitative Skills dropbox this semester, and the date the assignment(s) should be uploaded to D2L Empirical and Quantitative Skills dropbox. Not every assignment will be collected for assessment every semester. Your instructor will notify you which
assignment(s) must be submitted for assessment in the D2L Empirical and Quantitative Skills dropbox.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in D2L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills (CO 1)</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Communication Skills (CO 2)</td>
<td>To include effective development, interpretation and expression of ideas though written, oral, and visual communication.</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Empirical and Quantitative Skills (CO 3)</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>Measurements Lab (Lab 2)</td>
<td>Not this term</td>
</tr>
<tr>
<td>Teamwork (CO 4)</td>
<td>To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>To include the ability to connect choices, actions and consequences to ethical decision-making.</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Social Responsibility</td>
<td>To include inter-cultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

The overall objectives of this course are that the learner will:

- Recognize that the universe can be described by a few natural laws.
- Describe the characteristics of objects within the solar system including the sun, planets, moons, asteroids, and comets.
- Demonstrate a basic familiarity with stellar life cycles, galaxies, and extragalactic objects.
- Demonstrate skills developed in critical thinking, communication (written and visual), empirical and quantitative analysis, and teamwork.
LAB POLICIES

1. You may submit your lab by turning to the appropriate dropbox in the D2L lab course.
2. Due dates are more than merely suggestions. Labs are due by midnight of the day listed.
3. The two lowest grades are dropped, but I advise that you not automatically skip two labs. Emergencies do happen!
4. You are responsible for missed lab material on the lab exam.

ASTRONOMY 105 COURSE GRADING POLICY

• Astronomy 105 (Lecture) and Astronomy 105L (Lab) are averaged into one grade and 
THE SAME GRADE WILL BE RECORDED FOR BOTH LECTURE AND 
LABORATORY. The FINAL COURSE GRADE is explained in your lecture syllabus.
• There are 13 grades that will be used to determine a lab average (12 regular labs and 
the night lab). The two lowest regular lab grades will be dropped, leaving 11 graded 
exercises. The night lab is a required lab and will not be dropped. The Measurements 
lab represents the core curriculum assessment and will not be dropped. In addition 
half of the grade for the Measurements lab will come from the core assessment 
sections of the report. These sections are clearly labeled in the lab manual. The lab 
exercises will count 75% and the Lab Exam 25% of the FINAL LAB AVERAGE. The 
FINAL LAB AVERAGE will be computed as follows:

Exercise Average = ((Sum of labs 1-12) – (two low grades from 1-12) + night lab)/11

FINAL LAB AVERAGE = (Exercise Average X 0.75) + (Lab Exam X 0.25)

ACADEMIC INTEGRITY

Academic integrity is a responsibility of all university faculty and students. Faculty 
members promote academic integrity in multiple ways including instruction on the 
components of academic honesty, as well as abiding by university policy on penalties 
for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is 
not limited to (1) using or attempting to use unauthorized materials to aid in achieving a 
better grade on a component of a class; (2) the falsification or invention of any 
information, including citations, on an assigned exercise; and/or (3) helping or 
attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting 
the words or ideas of another person as if they were your own. Examples of plagiarism 
are (1) submitting an assignment as if it were one’s own work when, in fact, it is at least 
partly the work of another; (2) submitting a work that has been purchased or otherwise 
obtained from an Internet source or another source; and (3) incorporating the words or 
ideas of an author into one’s paper without giving the author due credit.

Please read the complete policy at 
http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf

WITHHELD GRADES POLICY

Ordinarily, at the discretion of the instructor of record and with the approval of the 
academic chair/director, a grade of WH will be assigned only if the student cannot 
complete the course work because of unavoidable circumstances. Students must 
complete the work within one calendar year from the end of the semester in which they 
receive a WH, or the grade automatically becomes an F. If students register for the
same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

STUDENTS WITH DISABILITIES
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.